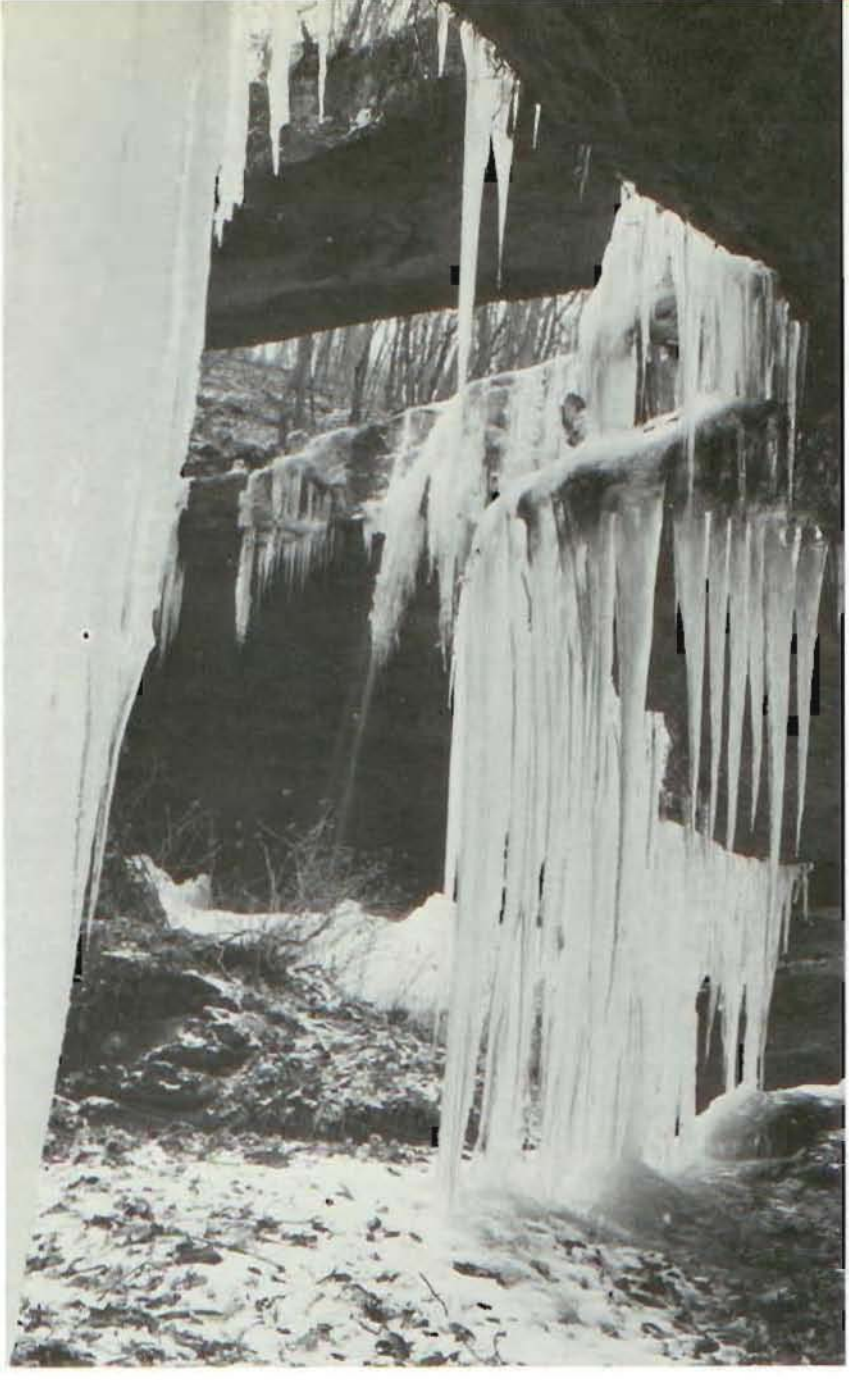

Rock bridge in Hocking County, Ohio

Photo by James L. Murphy

Ohio's Natural Rock Bridges

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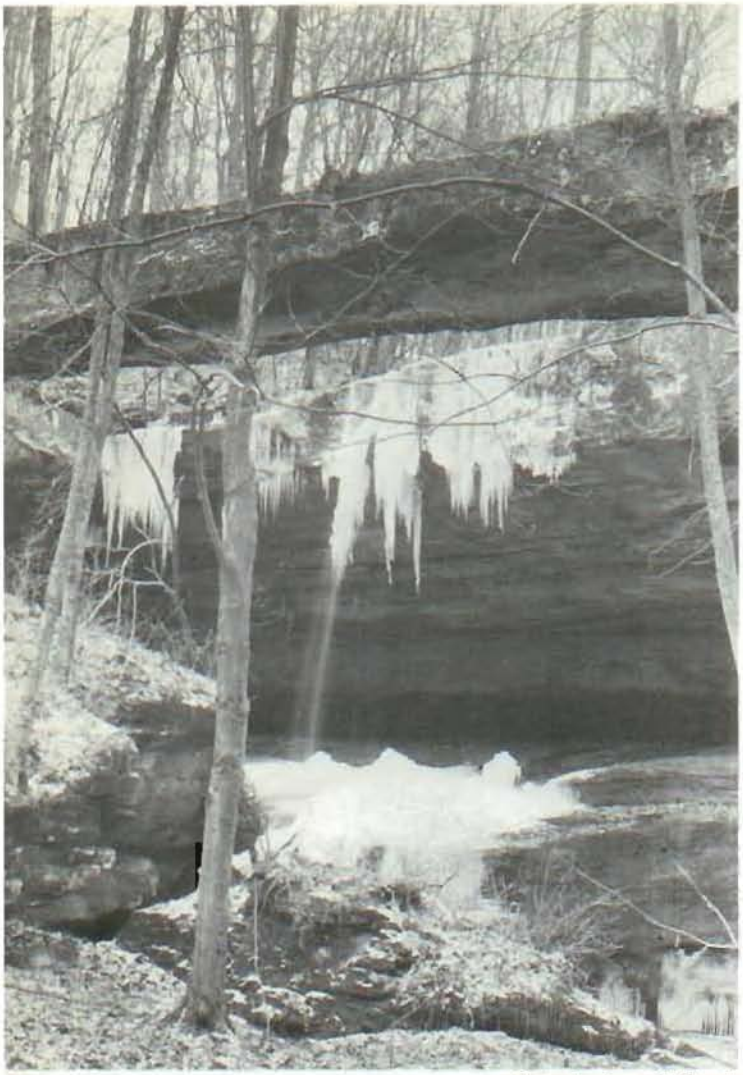
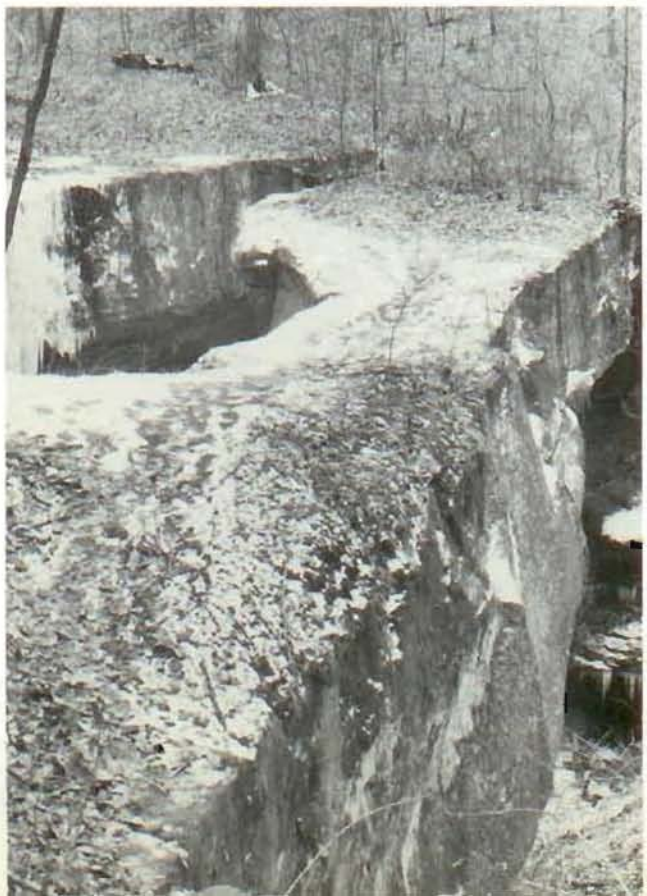
OHIO'S NATURAL rock bridges form one of the state's most spectacular — as well as one of its least publicized — geological phenomena. About a dozen of these natural stone arches, similar in origin and structure to the better known examples in Kentucky and Virginia, occur in the sandstone bedrock of southeastern Ohio. Though neither as large nor as famous as the Virginian "Natural Bridge" discovered by Thomas Jefferson, several of Ohio's rock bridges remain impressive monuments today. All represent a curious, uncommon geologic erosional feature, well worth a visit by amateur naturalists and geologists.

The most spectacular of these natural structures is in the "Hocking Hills" region southeast of Lancaster in Fairfield County. Lying near the head of a small tributary of the Hocking River, this natural



Photos by James L. Murphy

Hocking County, Ohio, natural rock bridge is shown in both low and high angle views, in photos above and below. Decorated pleasingly with snow and icicles, the sandstone formation is a monument to effectiveness of weather as a sculptor.



Water carves the bridges...

rock bridge is responsible for the name of the nearby village of Rockbridge in scenic Hocking County. Here, centuries of wind, rain, and percolating groundwater first carved a deep, cave-like recess in the softer mid-portion of the Mississippian Black Hand sandstone; gradually, erosion also worked along a natural joint plane some distance behind the brink of the cliff, eventually widening the joint until only a thin, fragile-looking arch of stone remains at the front of the overhanging ledge. Much the same principle is responsible for carving the spectacular natural bridges of the southwestern United States, though the erosive force at work there is primarily wind rather than water.

The chief factor responsible for development of the Hocking County rock bridge lies in the variable resistance of the several layers of the Black Hand sandstone. Like many deltaic sandstone deposits, the Black Hand consists of three distinct layers analogous to the topset, foreset, and bottomset beds of modern deltaic deposits.

In the case of the Black Hand sandstone, the middle layer is particularly susceptible to weathering, much less resistant than the upper layer, thus producing numerous rocky overhangs and shelters. The more resistant beds were long a source of building stone in the Hocking Valley, were widely quarried in the Lancaster-Sugar Grove region, and supplied much of the stone used in the locks of the Hocking Valley Canal. The ruins of a canal lock standing across the river from the natural bridge attest to the durability of the stone.

The thick, massive, Black Hand sandstone is also responsible for the development of characteristic, box canyon-like "coves" along the smaller tributaries of the Hocking River. Many of these coves remain relatively undisturbed by man and contain relicts (something left unchanged) of the original plant cover. The Hocking Hills represent the northernmost extremity of Lucy Braun's "Cliff Section" and contain comparatively pure Mixed Mesophytic plant communities, including such rare southern disjuncts (distinctly separated from usual contiguous or closely adjacent areas) as native rhododendron and flame azalea, known in Ohio only in this area. The Hocking County rock bridge lies at the head of just such a cove, though heavy timbering has greatly altered the original vegetation.

The small stream that trickles through the "window" of the Hocking County rock bridge renders

Photographer unknown

People indicate size of Washington County rock bridge.

the floor of the associated rock shelter sufficiently damp and uncomfortable to have prevented habitation by primitive man. Erosion of the Black Hand sandstone elsewhere in the "Hocking Hills" region, however, has produced innumerable rock ledges and shelters sufficiently dry to have permitted occupation by the aborigines. Ash Cave, now a state park, is well known to the tourist; others, such as Kettle Hill Cave, near Lancaster, are on private property or in remote areas difficult of access.

Many of these shelters have yielded exquisitely preserved artifacts of leather, wood, grass, and even featherwork. Such shelters have also yielded important plant remains that shed light on aboriginal diet patterns — corn, squash, nut shells, and even dried clusters of wild grapes. Unfortunately, most of these rock shelters in the Hocking Hills have been pilfered by indiscriminate amateur digging that has destroyed valuable stratigraphic evidence in the process of searching for artifacts.

Only one of Ohio's natural rock bridges is associated with a shelter inhabited by primitive man. This is the small Mustapha Island rock shelter, which stands beside the Ohio River near the Athens-Washington County line. The shelter and natural bridge are developed in a small cliff of Hockingport sandstone of upper Pennsylvanian age. Countless Ohio River floods had deposited some six feet of fine silt on the shelter floor before the small ephemeral stream that trickled over the lip of the shelter eroded a natural joint at the rear of the shelter sufficiently to permit a change in the stream's path.

Once the stream began flowing through the shelter rather than over it, most of the shelter floor was quickly eroded and washed into the nearby Ohio River. A small portion of the shelter floor was preserved, however, and was excavated in 1971. The uppermost 7-8 inches yielded a few nails and other metal objects, while the lower five feet was entirely barren of artifact material or refuse. Sandwiched between was a thin, fire-reddened zone that yielded some meagre evidence of primitive man, including flint chips, a broken triangular flint arrow point, a fragmentary bird bone bead, deer bone, pieces of turtle shell and walnut shells, and fresh water naiad shells. This evidence suggests a short term campsite, perhaps occupied by a single person, sometime during the Late Prehistoric period, about 400 to 900 years ago.

Not far from the Mustapha Island natural bridge, about a mile northeast of the village of Frost, stands a far more impressive natural rock bridge that has been a local landmark for many years. One can still see a weather-beaten barn along nearby U. S. Route 33 inviting the motorist to "Come See The Natural Bridge," and years ago an enterprising Marietta hotel owner produced a post card advertising the Washing-

Small rock bridge, near Fredericktown, Columbiana Cty.

Photo by Foster B. Shattuck

BRIDGES ... *continued*

ton County Natural Bridge. During the early part of this century, particularly during the 1920s and 1930s, the owner of the farm on which the natural bridge stands found it lucrative to charge picknicking visitors 25¢ admission to see the bridge, in this way managing to pay for the occasional cow lost by straying off the edge of the rock bridge; but today the farm owners are merely surprised at the infrequent visitors — about two or three a year — who come looking for the bridge.

The Washington County rock bridge vies with the Hocking County bridge in size, but is a somewhat more massive span. It appears to have been formed to a large extent by collapse of the rear of the shelter roof, for a large block of sandstone (to the right of the man in the accompanying photograph) quite obviously is a remnant of the old shelter roof or ceiling.

There are numerous smaller natural rock bridges scattered throughout the area of outcropping Mississippian and Pennsylvanian sandstones in eastern Ohio. One nice example stands along the railroad a short distance east of the town of Mineral, in Athens County. Several are known from the hilly district of Morgan County, southeast of Zanesville. Interestingly, none seem to have been discovered in the limestone terrain of southwestern Ohio, though natural bridges are normally a common feature of dessicated limestone topography.

Perhaps the smallest rock bridge in Ohio is one discovered a few years ago near Fredericktown, on a small tributary of the North Fork of Little Beaver Creek, in Columbiana County. This small span of Lower Freeport sandstone of Pennsylvanian age, no more than a few feet in length, looks like it could scarcely bear the weight of a man and clearly illustrates the ephemeral nature of such erosional features. In a relatively short period of time, whether measured in decades or centuries, erosion and weathering will take their toll. In the meantime, the bridge serves as a landmark and point of interest for Beaver Creek State Park.

Surprisingly, neither of the state's more spectacular natural bridges, that near Rockbridge and the Washington County bridge, have been developed by either state or private interests. The current owners are generous in allowing curious visitors to hike across their farms to see the rock bridges, but the structures remain one of Ohio's least known natural wonders.